

Predation and ingestion of a barred grass snake *Natrix helvetica* by a rainbow trout *Oncorhynchus mykiss* in Lot, France

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Barred grass snakes (*Natrix helvetica*) are found throughout north-west Europe (Kindler & Fritz, 2017) and potentially grow to 1.5 m but rarely attain this size (Speybroeck et al., 2016). They are thought to feed primarily on amphibians and are adept swimmers although rarely seen hunting in open water (Gregory & Isaac, 2004).

The rainbow trout (*Oncorhynchus mykiss*) has been introduced to many European countries and is valued as a game fish and for its economic importance as food (Crawford & Muir, 2008). Despite the introduction, the species has rarely formed self-sustaining populations in the wild in France (Stanković et al., 2015). However, rainbow trout predation has been shown to reduce amphibian populations, e.g. *Rana muscosa* in the USA (Vredenburg, 2004) and *Rana temporaria* in Sweden (Nyström et al., 2001).

At around 16:00 h on the 18th July 2020, a rainbow trout, recently released for the purpose of recreational fishing, was caught by HO while angling along the Saint-Matré (a small stream) in Grézels, Lot, France (GPS: 44° 28' 03.7" N, 1° 09' 01.8" E). The fish was a mature specimen, roughly 30 cm long. The trout was gutted minutes after capture and surprisingly, a live hatchling barred grass snake was found inside the gastrointestinal tract (Fig 1). The hatchling snake measured approximately 20 cm long and appeared sluggish, but otherwise relatively unharmed. After a quick visual inspection, the snake was released onto a patch of grass where it remained still for approximately 20 minutes. Subsequently, it moved directly to a nearby pond and swam away.

It's reasonable to assume that the hatchling snake must have been consumed a short time prior to the trout's capture for it to have remained alive until discovery. It is also likely that the snake was swallowed whole whilst it was traversing the small river. The occurrence of fish within a grass snake diet is well documented (Gregory & Isaac, 2004); however, there are no scientific reports of fish preying on *N. helvetica* or other *Natrix* spp. There are, however, online references to grass snakes forming part of the diet of Pike (*Esox lucius*).

Barred grass snakes are well known for their anti-predatory responses such as feigning death and musking (Hagman et al., 2015), however, these behaviours would be less effective in the aquatic environment. What evidence there is suggests that the consumption of *N. helvetica*



Figure 1. Hatchling barred grass snake head and neck clearly seen coming out from the gastro-intestinal tract of the captured trout

by fish is rare and restricted to small specimens. The current observation suggests that it would be worthwhile investigating whether grass snakes close to commercial fisheries are at a significantly increased risk of predation.

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